AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A metal carrier for a catalyst comprising:

a honeycomb structure made of ferritic stainless steel and shaped in a cylindrical form, said honeycomb structure having a plurality of air vents, the air vents being substantially equal in size to each other ~~and disposed in concentric rings around an axis of said honeycomb structure~~, the honeycomb structure having alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively;

a cylindrical case covering an outer peripheral surface of the honeycomb structure, wherein the cylindrical case is composed of ferritic stainless steel containing Mo, said Mo content in the ferritic stainless steel is in the range of 0.30 wt% $\leqq$ Mo $\leqq$ 2.50 wt%; and

a catalyst layer being formed on exposed surfaces of said honeycomb structure and on an interior surface of said cylindrical case, and since the material of the case is the same as that of the honeycomb structure, a coefficient of linear expansion of the case is substantially the same as a coefficient of linear expansion of the honeycomb structure, thereby suppressing thermal deformation of the case,

wherein the plurality of air vents existing at an outermost position of the honeycomb structure is formed by cooperation of an entire inner face of the case and a waved plate of the honeycomb structure.

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Original) The metal carrier for a catalyst according to claim 1, wherein the catalyst layer is a noble metal formed on the honeycomb structure.

7. (Original) The metal carrier for a catalyst according to claim 6, wherein the noble metal is platinum.

8. (Currently Amended) A metal carrier for a catalyst comprising:

a honeycomb structure made of ferritic stainless steel and having a catalyst layer formed thereon, said honeycomb structure having a plurality of air vents, the air vents being substantially equal in size to each other ~~and disposed in concentric rings around an axis of said honeycomb structure~~, the honeycomb structure having alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively;

a case covering an outer surface of the honeycomb structure, wherein the case is composed of ferritic stainless steel containing Mo, said Mo content in the ferritic stainless steel is in the range of 0.30 wt% $\leqq$ Mo $\leqq$ 2.50 wt%,

wherein said catalyst layer being formed on exposed surfaces of said honeycomb structure and on an interior surface of said cylindrical case, and since the material of the case is the same as that of the honeycomb structure, a coefficient of linear expansion of the case is substantially the same as a coefficient of linear expansion of the honeycomb structure, thereby suppressing thermal deformation of the case, and

wherein the plurality of air vents existing at an outermost position of the honeycomb structure is formed by cooperation of an entire inner face of the case and a waved plate of the honeycomb structure.

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Original) The metal carrier for a catalyst according to claim 8, wherein the catalyst layer is a noble metal formed on the honeycomb structure.

14. (Original) The metal carrier for a catalyst according to claim 13, wherein the noble metal is platinum.

15. (Currently Amended) A metal carrier for a catalyst comprising:

a honeycomb structure made of ferritic stainless steel, said honeycomb structure having a plurality of air vents~~, the air vents being~~ which are substantially equal in size to

each other ~~and disposed in concentric rings around an axis of said honeycomb structure~~, the honeycomb structure having alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively;

a case covering an outer peripheral surface of the honeycomb structure, wherein the case is composed of ferritic stainless steel containing Mo, said Mo content in the ferritic stainless steel is 1.2 wt%; and

a catalyst layer being formed on exposed surfaces of said honeycomb structure and on an interior surface of said cylindrical case, and since the material of the case is the same as that of the honeycomb structure, a coefficient of linear expansion of the case is substantially the same as a coefficient of linear expansion of the honeycomb structure, thereby suppressing thermal deformation of the case, wherein the plurality of air vents existing at an outermost position of the honeycomb structure is formed by cooperation of an entire inner face of the case and a waved plate of the honeycomb structure.

16. (Cancelled)

17. (Cancelled)

18. (Previously Presented) The metal carrier for a catalyst according to claim 15, wherein the catalyst layer is a noble metal formed on the honeycomb structure.

19. (Previously Presented) The metal carrier for a catalyst according to claim 18, wherein the noble metal is platinum.

20. (Currently Amended) A metal carrier for a catalyst comprising:

a honeycomb structure made of ferritic stainless steel and having a catalyst layer formed thereon, said honeycomb structure having a plurality of air vents~~, the air vents being~~ which are substantially equal in size to each other ~~and disposed in concentric rings around an axis of said honeycomb structure~~, the honeycomb structure having alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively;

a case covering an outer surface of the honeycomb structure, wherein the case is composed of ferritic stainless steel containing Mo, said Mo content in the ferritic stainless steel is 1.20wt%,

wherein said catalyst layer being formed on exposed surfaces of said honeycomb structure and on an interior surface of said cylindrical case, and since the material of the case is the same as that of the honeycomb structure, a coefficient of linear expansion of the case is substantially the same as a coefficient of linear expansion of the honeycomb structure, thereby suppressing thermal deformation of the case, and

wherein the plurality of air vents existing at an outermost position of the honeycomb structure is formed by cooperation of an entire inner face of the case and a waved plate of the honeycomb structure.

21. (Cancelled)

22. (Cancelled)

23. (Previously Presented) The metal carrier for a catalyst according to claim 20, wherein the catalyst layer is a noble metal formed on the honeycomb structure.

24. (Previously Presented) The metal carrier for a catalyst according to claim 23, wherein the noble metal is platinum.

REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1, 6-8, 13-15, 18-20, 23, and 24 are pending. Claims 1, 8, 15, and 20 are amended. Claims 1, 8, 15, and 20 are independent. The Examiner is respectfully requested to reconsider the rejections in the Office Action in view of the amendments and remarks set forth herein.

Specification Changes

The paragraph beginning on page 3, line 8 of the specification is amended so that the wording describing air vents 4 is now consistent with what is shown in FIG. 1.

Rejection Under 35 U.S.C. §103(a)

Claims 1, 6-8, 13-15, 18-20, 23, and 24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Whittenberger et al (U.S. 5.651,906) in view of Kohno et al. (U.S. 5,653,825), Arai et al. (U.S. 5,151,254), and either of Toyoda et al. (U.S. 5,336,472) and Maus (U.S. 4,713,361). These claims are further rejected as being unpatentable over Honma (U.S. 5,323,608) in view of Kohno et al., Arai et al., and either of Toyoda et al. and Maus. These rejections are respectfully traversed.

While not conceding the appropriateness of the rejections, but merely to advance the prosecution of the present application, independent claims 1, 8, 15, and 20 are amended herein to recite combinations of elements directed to a metal carrier for a catalyst, including

the honeycomb structure having air vents which are substantially equal in size, and having alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively.

Full support for the honeycomb structure having air vents 4 which are substantially equal in size and alternating waved plates 7 and base plates 8, the waved plates having sections that are substantially flat, and each of the base plates 8 having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates 7 located inwardly and outwardly thereof, respectively, can be seen in FIG. 1.

Since the metal carrier for the catalyst is provided with a honeycomb structure having air vents which are substantially equal in size and alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively, a metal carrier for the catalyst provided by the present invention has excellent strength, high temperature oxidation resistance, good deformation resistance, and a simple structure.

The Applicants respectfully submit that none of the references cited by the Examiner teaches or suggests a honeycomb structure having air vents which are substantially equal in size and alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being

disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively.

A. Arguments regarding the rejection Whittenberger et al. (U.S. 5.651,906) in view of Kohno et al. (U.S. 5,653,825), Arai et al. (U.S. 5,151,254), and either of Toyoda et al. (U.S. 5,336,472) and Maus (U.S. 4,713,361).

The Applicants respectfully submit that **Whittenberger** et al. merely discloses air vents formed by corrugated or involute core elements and which vary in size, and fail to teach or suggest a honeycomb structure having alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively.

Kohno et al. merely disclose stainless steel sheets having a Mo content of not more than 2.0%, and **Arai et al.** merely disclose coating a catalyst layer. Neither of these references provides any teaching or suggestion about size of the air vents or about flat sections on the waved plate.

Regarding the **Toyoda et al.** and **Maus** documents, these references also fail to teach or suggest the honeycomb structure having alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively.

In contrast to the presently claimed invention, **Toyoda et al.**, in the discussion about prior art, merely disclose a flat plate 1 being welded along a narrow line and thus being

separated from curved corrugated plate 3; and also and merely disclose casing 4 being a different material than flat plate. (See column 2, lines 8-44 and Fig. 1(a) and (b)). Further, **Toyoda et al.**, in the discussion about the **Toyoda et al.** device, merely discloses two flat plates 1, 1 used in a pair between each corrugated plate 3 (See the claims and FIG. 2(a), FIG. 3(a), FIG. 4(a) and (b), and FIG. 5, all of which disclose two flat plates 1,1). Thus, in the **Toyoda et al.** device, only one surface of the each flat plate 1, 1 faces a corrugated plate 3, while the other surface of each flat plate 1,1 faces another flat plate 1,1. Thus **Toyoda et al. cannot be combined with Whittenberger et al., Kohno, and Arai** to teach the present invention.

On page 4 of the Office Action, the Examiner alleges that **Maus** discloses "the conventionality of providing the honeycomb structure in which the outermost air vents are formed in cooperation of an entire surface of the case". By contrast, claims 1, 8, 15, and 20 of the present invention set forth "air vents existing at an outermost position of the honeycomb structure is formed by cooperation of an entire inner face of the case and a waved plate of the honeycomb structure". A careful review of Maus Fig. 1, shows that **Maus** fails to teach this; the outermost air vents of Maus are formed outside of the case, and thus cannot cooperate with an inner surface of the case, as set froth in the claims of the present invention. Moreover, while **Maus** teaches alternating waved and base plates, the waved plates of **Maus** are not formed with flat sections, as set forth in the claims of the present invention. Thus **Maus cannot be combined with Whittenberger, Kohno, and Arai** to teach the present invention.

B. Arguments regarding the rejection Honma (U.S. 5.323,608) in view of Kohno et al. (U.S. 5,653,825), Arai et al. (U.S. 5,151,254), and either of Toyoda et al. (U.S. 5,336,472) and Maus (U.S. 4,713,361).

The Applicants respectfully submit that **Honma** merely discloses a corrugated sheet having a continuous "S" shape, and fails to teach or suggest a honeycomb structure having alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively.

Kohno et al. merely disclose stainless steel sheets having a Mo content of not more than 2.0%, and **Arai et al.** merely disclose coating a catalyst layer. Neither of these references provides any teaching or suggestion about size of the air vents or about flat sections on the waved plate.

Regarding the **Toyoda et al.** and **Maus** documents, these references also fail to teach or suggest the honeycomb structure having alternating waved plates and base plates, the waved plates having sections that are substantially flat, and each of the base plates having an inner and an outer surface being disposed against the flat sections of adjoining ones of the waved plates located inwardly and outwardly thereof, respectively.

In contrast to the presently claimed invention, **Toyoda et al.**, in the discussion about prior art, merely disclose a flat plate 1 being welded along a narrow line and thus being separated from curved corrugated plate 3; and also and merely disclose casing 4 being a different material than flat plate. (See column 2, lines 8-44 and Fig. 1(a) and (b)). Further,

Toyoda et al., in the discussion about the **Toyoda et al.** device, merely discloses two flat plates 1, 1 used in a pair between each corrugated plate 3 (See the claims and FIG. 2(a), FIG. 3(a), FIG. 4(a) and (b), and FIG. 5, all of which disclose two flat plates 1,1). Thus, in the **Toyoda et al.** device, only one surface of the each flat plate 1, 1 faces a corrugated plate 3, while the other surface of each flat plate 1,1 faces another flat plate 1,1. Thus, **Toyoda et al. cannot be combined with Honma, Kohno, and Arai** to teach the present invention.

On page 4 of the Office Action, the Examiner alleges that **Maus** discloses "the conventionality of providing the honeycomb structure in which the outermost air vents are formed in cooperation of an entire surface of the case". By contrast, claims 1, 8, 15, and 20 of the present invention set forth "air vents existing at an outermost position of the honeycomb structure is formed by cooperation of an entire inner face of the case and a waved plate of the honeycomb structure". A careful review of Maus Fig. 1, shows that **Maus** fails to teach this; the outermost air vents of Maus are formed outside of the case, and thus cannot cooperate with an inner surface of the case, as set froth in the claims of the present invention. Moreover, while **Maus** teaches alternating waved and base plates, the waved plates of **Maus** are not formed with flat sections, as set forth in the claims of the present invention. Thus, **Maus cannot be combined with Honma, Kohno, and Arai** to teach the present invention.

In view of above described amendments and arguments, it is respectfully submitted that the cited references, taken alone or in combination, fail to teach or suggest the novel combination of elements of the present invention. Accordingly, the rejection under 35

U.S.C. §103(a) has been overcome, and independent claims 1, 8, 15, and 20, as amended herein, as well as the claims depending therefrom, are believed to be in condition for allowance.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Carl T. Thomsen (Reg. No. 50,786) at (703) 205-8000.

Pursuant to 37 C.F.R. § 1.17 and 1.136(a), Applicants respectfully petition for a two (2) month extension of time for filing a response in connection with the present application. The required fee of $410.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for

any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

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0505-0477P
Attachment
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